Claims

1. A communication method in a radio system comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface, the method comprising associating data units of each logical channel with sequence numbers in a transmitting user terminal.

2. The method of claim 1, further comprising:

receiving, in the network infrastructure, data units of at least one logical channel associated with sequence numbers in the user terminal; and

arranging, in a network element of the network infrastructure, the data units of each logical channel in order of the sequence numbers associated with the data units.

3. The method of claim 1, further comprising performing at least one retransmission including at least one data unit of a logical channel from the user terminal to the network infrastructure over the air interface.

4. The method of claim 1, further comprising:

associating each data unit of one transmission time interval with one sequence number; and

associating data units in successive transmission time intervals with successive sequence numbers.

5. The method of claim 1, further comprising:

associating data units of one transmission time interval with successive sequence numbers; and

associating data units in successive transmission time intervals with successive sequence numbers.

6. The method of claim 1, further comprising:

mapping medium access control-e flows from a medium access control-d entity to transport channels in a medium access control-e entity of the user terminal; and

associating data units with sequence numbers common to the medium access control-d entity and the medium access-e entity.

7. The method of claim 1, further comprising transmitting the data units using enhanced uplink dedicated channel.

8. A communication method in a radio system comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface, the method comprising associating data units of each logical channel with sequence numbers in a medium access control-d entity, in a radio link control entity or in an entity between the radio link control entity and the medium access control-d entity of a user terminal.

9. The method of claim 8, further comprising arranging the data units of each logical channel in the radio link control entity, in the medium access control-d entity or in the entity between the radio link control entity and the medium access control-d entity of a network element of the network infrastructure.

10. The method of claim 8, further comprising arranging the data units in a radio network controller.

11. A communication method in a radio system comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface, the method comprising:

receiving, in the network infrastructure, data units of at least one logical channel associated with sequence numbers in the user terminal; and

arranging the data units of each logical channel in a network element of the network infrastructure.

12. A communication method in a radio system comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface, the method comprising:

associating each data unit of a logical channel in one transmission time interval with one sequence number; and

associating data units in successive transmission time intervals with successive sequence numbers in a transmitting user terminal.

13. The method of claim 12, further comprising:

receiving, in the network infrastructure, data units of at least one logical channel associated with sequence numbers in the user terminal; and

arranging, in the network infrastructure, the data units in order of the sequence numbers associated with the data units in the network infrastructure.

14. The method of claim 12, further comprising performing at least one retransmission including at least one data unit of a logical channel from the user terminal to the network infrastructure over the air interface.

15. The method of claim 12, further comprising:

associating data units with sequence numbers by giving a common medium access control-e header to medium access control-d data units having the same logical channel number and the same sequence number; and

arranging the data units in order of the sequence numbers associated with the data units in a medium access control-e entity in the network infrastructure.

16. A computer program product of a radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, the computer program product comprising data units of each logical channel that are associated with sequence numbers in a transmitting user terminal.

17. A computer program product of a radio system comprising a network infrastructure, and at least one user terminal communicating with the network infrastructure over an air interface, the computer program product comprising data units of each logical channel that are associated with sequence numbers in a medium access control-d entity, in a radio link control entity or in an entity between the radio link control entity and the medium access control-d entity of a user terminal.

18. The computer program product of claim 17, wherein the data units of each logical channel that are arranged in the radio link control entity, in the medium access control-d entity or in the entity between the radio link control entity and the medium access control-d entity of a network element of the network infrastructure.

19. The computer program product of claim 16, wherein in the network element of the network infrastructure, the data units of each logical channel transmitted from the user terminal are arranged in order of the sequence numbers associated with the data units.

20. The computer program product of claim 16, wherein data units of each logical channel are associated with sequence numbers in a medium access control-d entity, in a radio link control entity or at an entity between the radio link control entity and the medium access control-d entity of the user terminal.

21. The computer program product of claim 17, wherein the data units of each logical channel are arranged in order according to the sequence numbers in the medium access control-d entity, in the radio link control entity or in the entity between the radio link control entity and the medium access control-d entity of the network element of the network infrastructure.

22. The computer program product of claim 16, wherein at least one retransmission including at least one data unit of a logical channel from the user terminal to the network infrastructure over the air interface is performed.

23. A computer program product of a radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, the computer program product comprising:

data units of a logical channel in one transmission time interval wherein each data unit is associated with one sequence number; and

data units in successive transmission time intervals are associated with successive sequence numbers in a transmitting user terminal.

24. The computer program product of claim 23, wherein the data units transmitted from the user terminal are arranged in order of the sequence numbers associated with the data units in the network infrastructure.

25. The computer program product of claim 23, wherein at least one retransmission including at least one data unit of a logical channel from the user terminal to the network infrastructure over the air interface is performed.

26. A computer program product of a radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, the computer program product comprising data units of each logical channel that are arranged, in a network element of the network infrastructure, in order of the sequence numbers associated with the data units in the user terminal.

27. A network element of a radio system comprising a network infrastructure, and at least one user terminal is configured to communicate with the network infrastructure over an air interface, wherein

the network element is a part of the network infrastructure;

the network element is configured to receive data units of each logical channel from a user terminal, the data units being associated with sequence numbers in a user terminal; and

the network element is configured to arrange the data units of each logical channel in order according to the sequence numbers associated with the data units.

28. The network element of claim 27, wherein the radio network controller is configured to arrange the data units of each logical channel in order of the sequence numbers in a medium access control-d entity, in a radio link control entity or at an entity between a radio link control entity and a medium access control-d entity.

29. A radio network controller of a radio system comprising a network infrastructure, and at least one user terminal is configured to communicate with the network infrastructure over an air interface, wherein the radio network controller is configured

to receive data units of each logical channel from a user terminal, the data units being associated with sequence numbers in the user terminal; and

to arrange the data units of each logical channel in order according to the sequence numbers associated with the data units.

30. A user terminal of a radio system comprising a network infrastructure, wherein a user terminal is configured to associate data units of each logical channel with sequence numbers.

31. The user terminal of claim 30, wherein the user terminal is configured to associate data units of each logical channel with sequence numbers in a medium access control-d entity, in a radio link control entity or at an entity between a radio link control entity and a medium access control-d entity of a user terminal.

32. The user terminal of claim 30, wherein the user terminal is configured to transmit the data units to the network infrastructure and to perform at least one retransmission as a response to a request from the network infrastructure over an air interface, the retransmission including at least one data unit of a logical channel.

33. A radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, wherein a user terminal is configured to associate data units of each logical channel with sequence numbers.

34. A radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, wherein a user terminal is configured to associate data units of each logical channel with sequence numbers in a medium access control-d entity, in a radio link control entity or in an entity between a radio link control entity and a medium access control-d entity.

35. A radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, wherein,

a user terminal is configured to associate data units of each logical channel with sequence numbers;

the network infrastructure is configured to receive the data units of at least one logical channel associated with sequence numbers; and

the network infrastructure is configured to arrange the data units of each logical channel in order of the sequence numbers.

36. A radio system comprising a network infrastructure and at least one user terminal communicating with the network infrastructure over an air interface, wherein a user terminal is configured to associate each data unit of a

logical channel in one transmission time interval with one sequence number and the user terminal is configured to associate data units in successive transmission time intervals with successive sequence numbers.